

(Prior art)

Figure 1

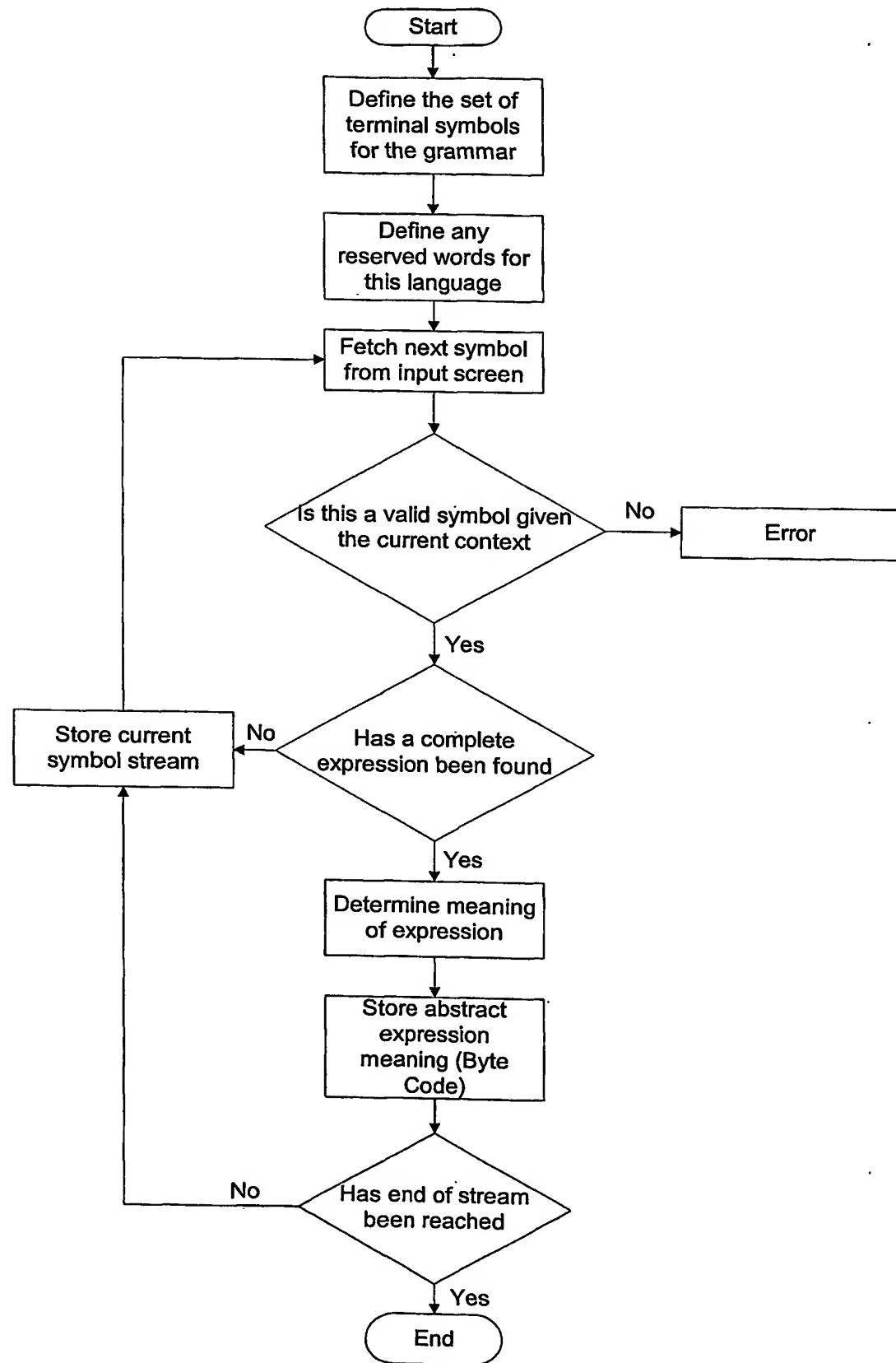


Figure 2

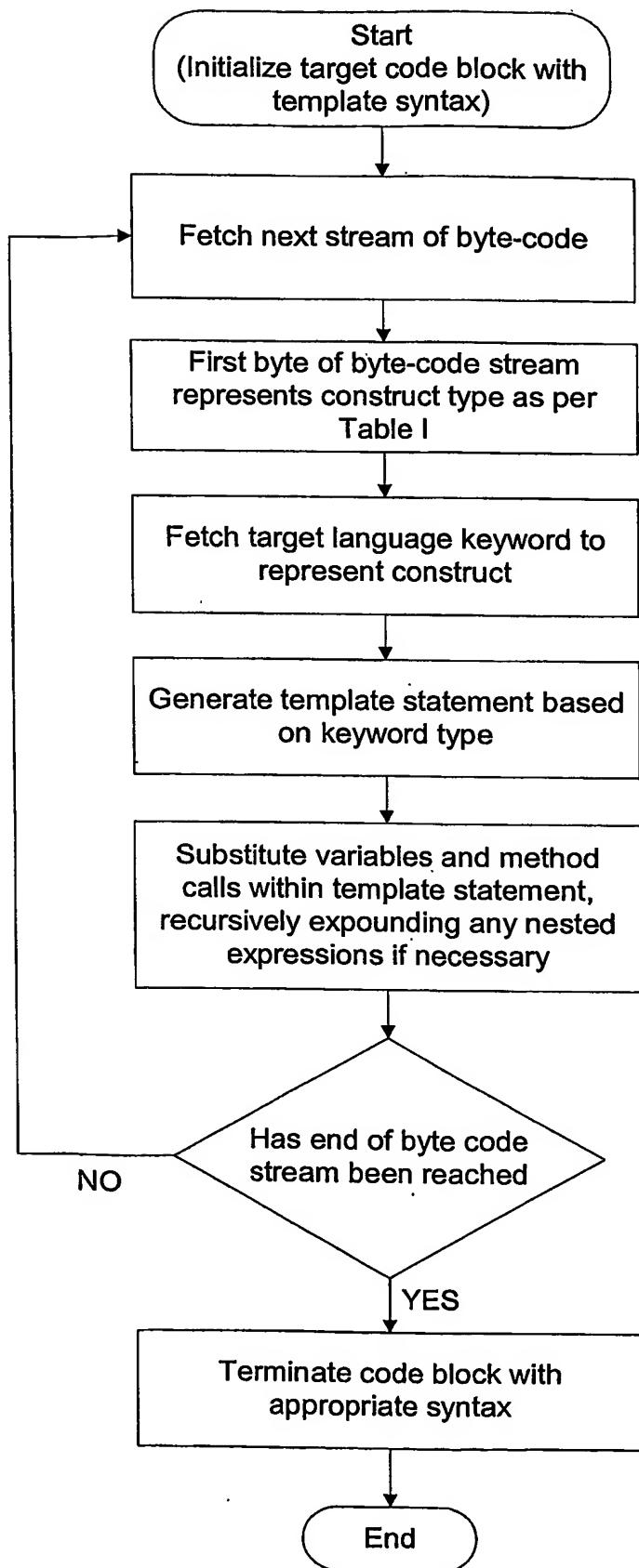


Figure 3

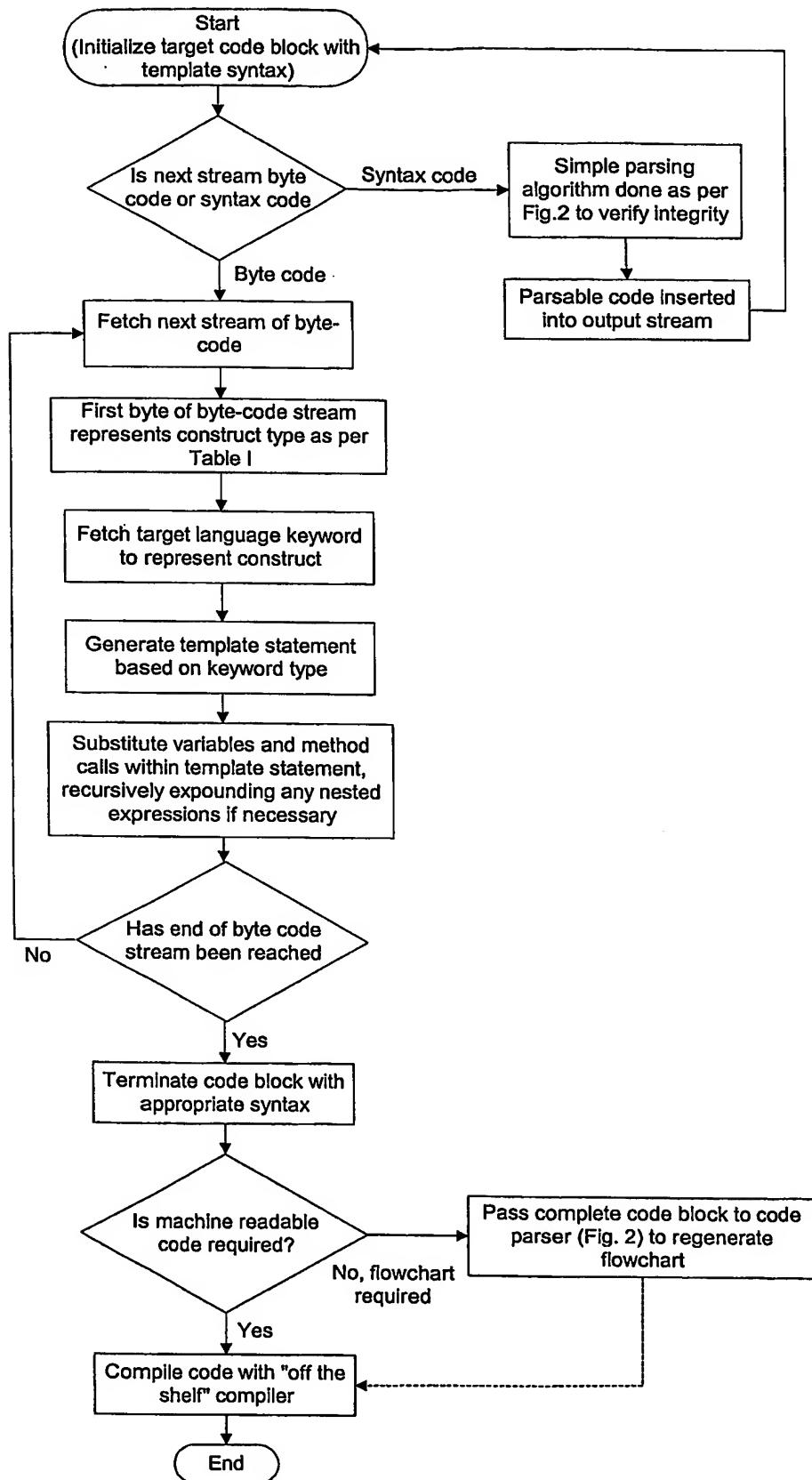


Figure 4

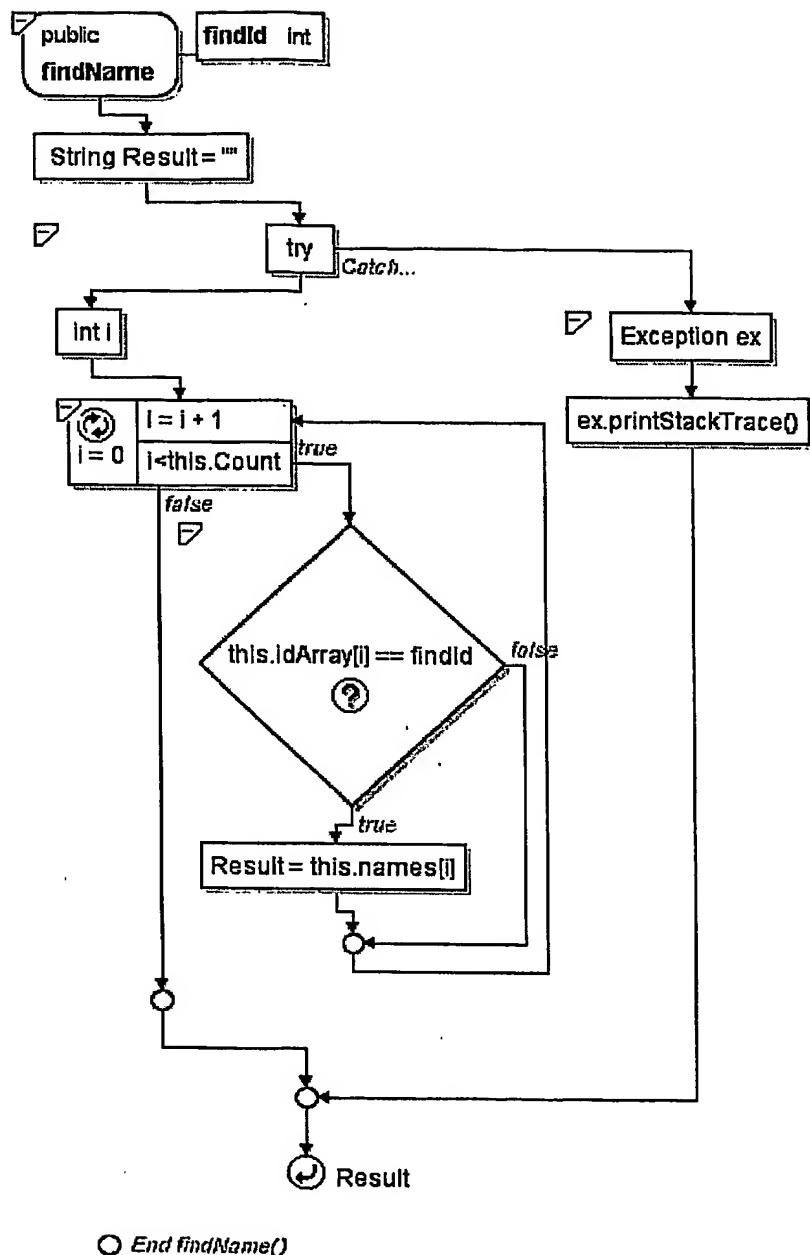


Figure 5

```
public class test {  
  
    //Fields:  
    private int[] idArray =  
    {0, 1, 2, 3, 4, 5, 6, 7, 8, 9};  
    private int Count = 10;  
  
    //Methods:  
    public String findName(int findId){  
        String Result = "";  
  
        try {  
            int i;  
  
            for (i = 0; i < this.Count; i = i + 1) {  
                if (this.idArray[i] == findId) {  
                    Result = this.names[i];  
                }  
            }  
  
        } catch (Exception ex) {  
            ex.printStackTrace();  
        }  
  
        return Result;  
    }  
}
```



Figure 6

```
public class test {  
  
    //fields:  
    private int[] idArray =  
    {0, 1, 2, 3, 4, 5, 6, 7, 8, 9};  
    private int Count = 10;  
  
    //Methods:  
    public String findName(int findId){  
        String Result = "";  
  
        try {  
            int i;  
  
            for (i = 0; i < this.Count; i = i + 1) {  
                if (this.idArray[i] == findId) {  
                    Result = this.names[i];  
                }  
            }  
  
            //Inserted Code  
            if (Result.equals (""))  
            {  
                Result = "<not found>";  
            }  
            //End of Inserted Code  
        } catch (Exception ex) {  
            ex.printStackTrace();  
        }  
  
        return Result;  
    }  
}
```



Figure 7

Global Symbols:

| Id | Name | Scope | Type |
|----|---------|---------|-----------------|
| #1 | idArray | private | Array of int |
| #2 | Count | private | int |
| #3 | names | private | Array of String |

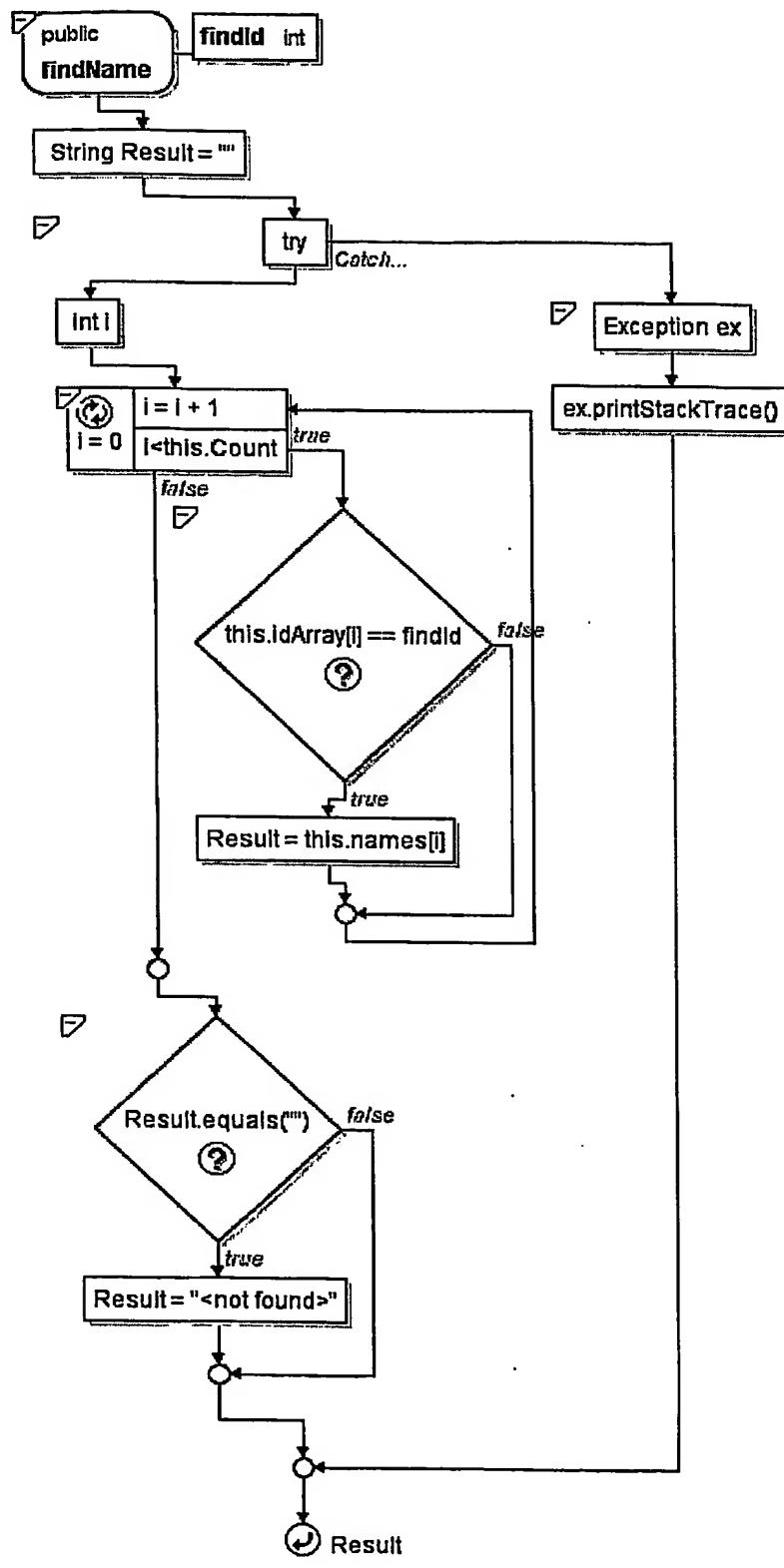
Local Symbols:

| Id | Name | Scope | Type |
|----|--------|-----------|--------|
| @1 | Result | local | String |
| @2 | findID | Parameter | int |
| @3 | i | local | int |

ByteCode:

| bytecode | Equivalent Code |
|---|---|
| 0x080x15 (@3=0 ; @3<#2 ; @3=@3 + 1) | //For-Loop: 0x15 is length of Expression (in Hex) |
| // Initializer: i = 0 | |
| // Condition: i IsLessThan Count | |
| // Step: i = i + 1; | |
| 0x030x0C (#1[@3]==@2) | //If Result IsEqualTo names[i] |
| 0x120x0B (@1=#3[@3]) | //Set Value: Result = names[i] |
| 0x04 | //End If |
| 0x09 | //End For-Loop |
| //byte code resulting from inserted Code | |
| 0x030x08 (@1== "") | //If Result IsEqualTo "" |
| 0x12x12 (@1=<not found>") | //Set Value: Result = "<not found>" |
| 0x04 | //End If |
| //End of byte code resulting from inserted Code | |

Figure 8



O End findName()

Figure 9

```
public class test {  
  
    //fields:  
    private int[] idArray =  
    {0, 1, 2, 3, 4, 5, 6, 7, 8, 9};  
    private int Count = 10;  
  
    //Methods:  
    public String findName(int findId){  
        String Result = "";  
  
        try {  
            int i;  
  
            for (i = 0; i < this.Count; i = i + 1) {  
                if (this.idArray[i] == findId) {  
                    Result = this.names[i];  
                }  
            }  
  
            if (Result != null && Result.equals (""))  
            {  
                Result = "<not found>";  
            }  
        } catch (Exception ex) {  
            ex.printStackTrace();  
        }  
  
        return Result;  
    }  
}
```



Figure 10

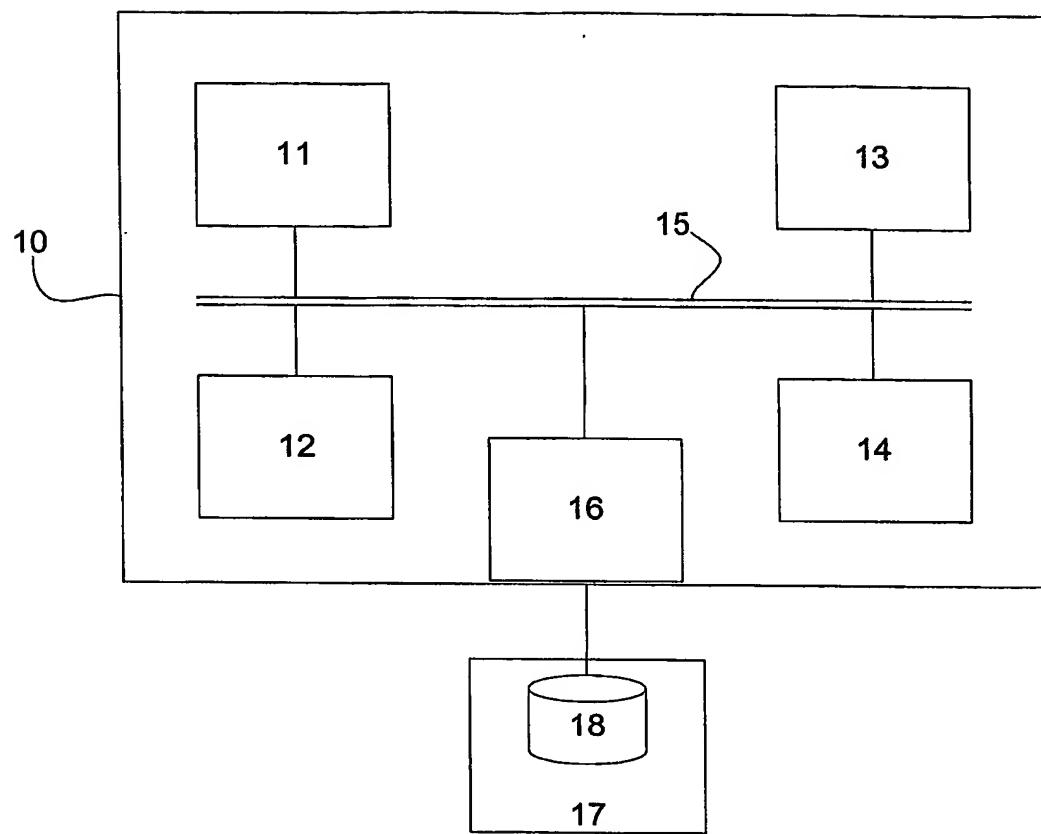


Figure 11

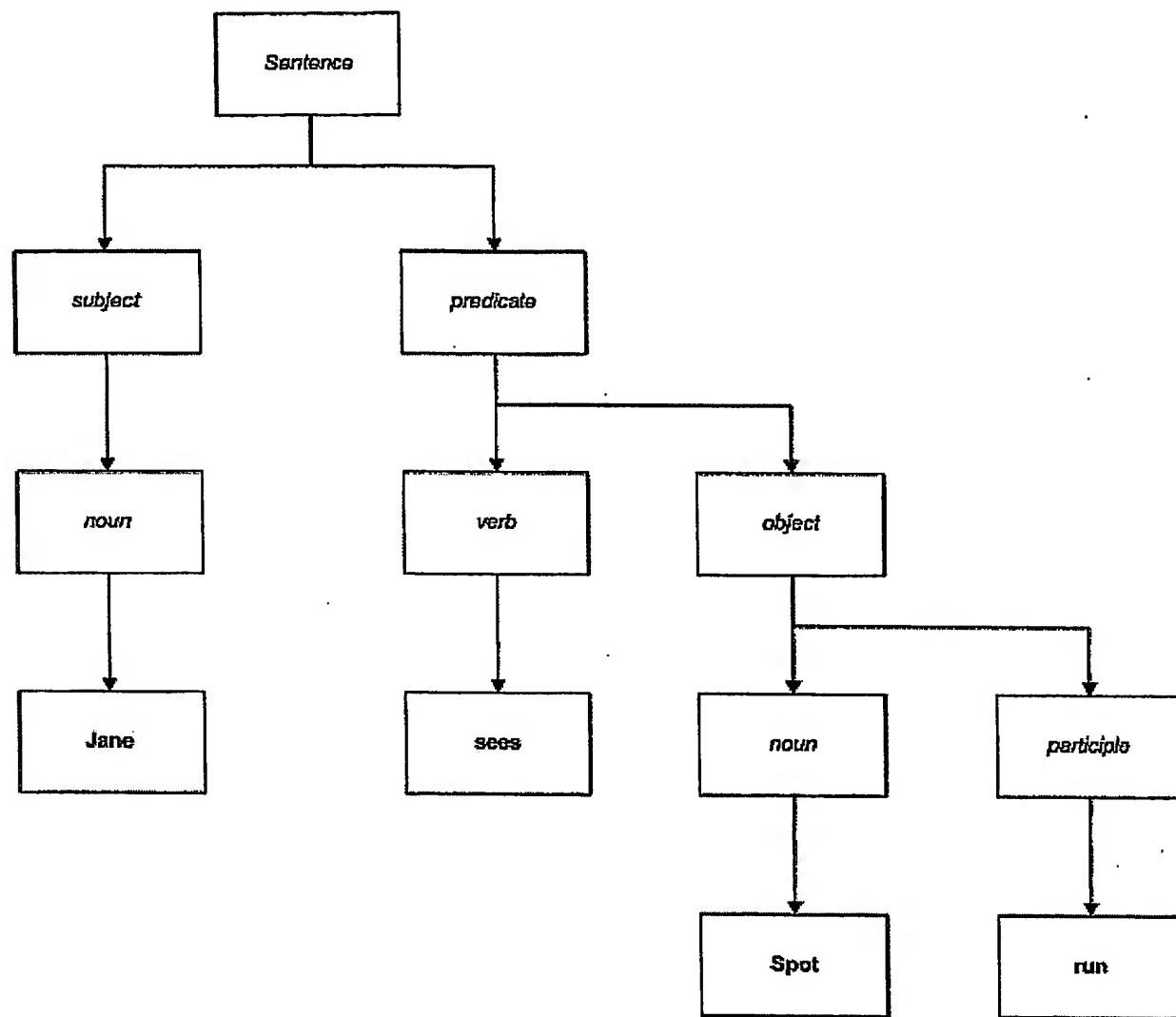


Figure 12



Figure 13

```

MethodBody
  Block class com.inteRAD.javamodel.tree.JBlockToString() not implemented
  StatementList [String result = "", class com.inteRAD.javamodel.tree.JTryCatchStatementToString() not implemented, class com.inteRAD.javamodel.tree.JReturnStatementToString() not implemented]
    JTryCatchStatement class com.inteRAD.javamodel.tree.JTryCatchStatementToString() not implemented
    Block class com.inteRAD.javamodel.tree.JBlockToString() not implemented
    StatementList [int i, class com.inteRAD.javamodel.tree.JForStatementToString() not implemented, class com.inteRAD.javamodel.tree.JIfStatementToString() not implemented]
      JForStatement class com.inteRAD.javamodel.tree.JForStatementToString() not implemented
        Initializer i = 0
        AssignmentExpression i = 0
        Condition i < this.count
        Increment i = i + 1
        AssignmentExpression i = i + 1
      Block class com.inteRAD.javamodel.tree.JBlockToString() not implemented
      StatementList [class com.inteRAD.javamodel.tree.JIfStatementToString() not implemented]
        JIfStatement class com.inteRAD.javamodel.tree.JIfStatementToString() not implemented
          Condition this.idArray[i] == 1
          JEqualExpression this.idArray[i] == 1
          ThenClause class com.inteRAD.javamodel.tree.JBlockToString() not implemented
            Block class com.inteRAD.javamodel.tree.JBlockToString() not implemented
              StatementList [class com.inteRAD.javamodel.tree.JReturnStatementToString() not implemented]
                JReturnStatement class com.inteRAD.javamodel.tree.JReturnStatementToString() not implemented
        JIfStatement class com.inteRAD.javamodel.tree.JIfStatementToString() not implemented
          Condition result == null && result.equals("")
          JBinaryExpression result == null && result.equals("")
          ThenClause class com.inteRAD.javamodel.tree.JBlockToString() not implemented
            Block class com.inteRAD.javamodel.tree.JBlockToString() not implemented
              StatementList [result = "<Not Found>"]
                AssignmentExpression result = "<Not Found>"
  CatchList [CatchParamNodeTest.java:26:24 Node Type: com.inteRAD.javamodeltree.JCatchClause]
    JFormalParameter: Exception ex
    Block class com.inteRAD.javamodel.tree.JBlockToString() not implemented
  JReturnStatement class com.inteRAD.javamodel.tree.JReturnStatementToString() not implemented
  JLocalVariableExpression: result

```